



Naval Helicopter Association 2008



**Safety Symposium
RADM A.J. Johnson
“Blackjack”**



The Agenda: An Overview

- **NSC's Mission Statement**
- **USN/USMC Mishap Rates**
- **CFIT**
- **White Out/Brown Out**
- **Aviation Trends and Takeaways**
- **ORM**
- **Tools and Resources**

***“Change is the mother of all
risk”***



NSC MISSION STATEMENT

Naval Safety Center provides safety assistance and advice to the CNO, CMC, and the Deputy Assistant SECNAV (Safety) to enable mishap prevention & save lives in order to:

- enhance warfighting capability***
- preserve resources and***
- improve combat readiness***



Marketing & Community Partnerships

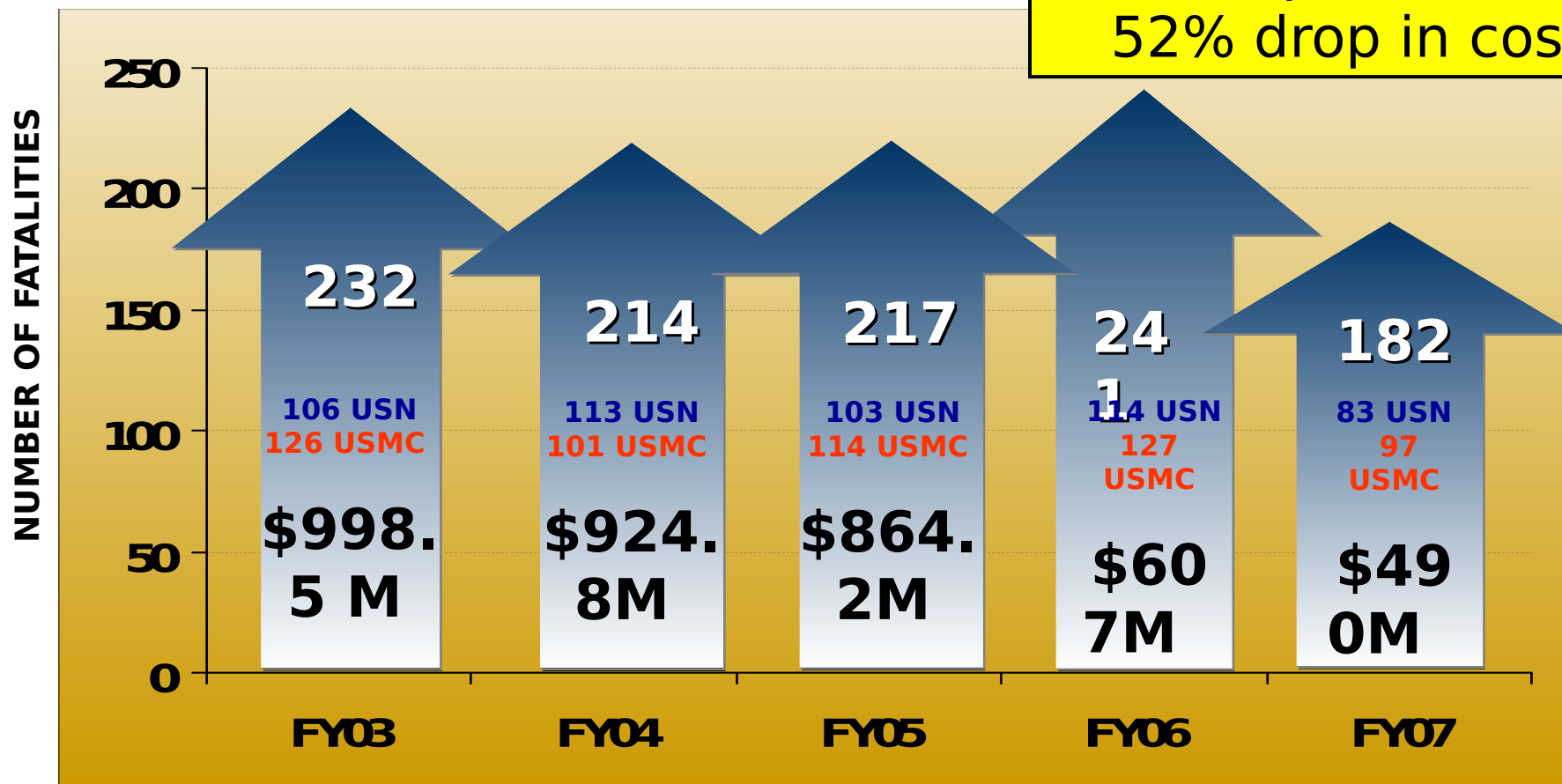


Saved Lives and Resources Provide "Saver"

Combat Readiness

DON Mishap Trends

FY07 vs. FY03:
22% drop in fatalities
52% drop in cost



OUR ENDSTATE GOAL IS
ZERO!



SECRETARY OF DEFENSE CHALLENGE



THE SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

MAY 30 2007

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
DIRECTOR, OPERATIONAL TEST AND EVALUATION
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION
DIRECTOR, NET ASSESSMENT
DIRECTORS OF THE DEFENSE AGENCIES
DIRECTORS OF THE DOD FIELD ACTIVITIES

SUBJECT: Zero Preventable Accidents

I am committed to reducing preventable accidents as one of the cornerstones of the Department of Defense's Safety Program. Consistent with the President's Safety, Health, and Return-To-Employment (SHARE) initiative, I have set some very specific mishap reduction goals for the Department. We are focused on closely monitoring our most pressing mishap areas: civilian and military injuries, aviation accidents, and the number one non-combat killer of our military, private motor vehicle accidents.

We can no longer tolerate the injuries, costs, and capability losses from preventable accidents. Accidents cost the Department about \$3 billion per year, with indirect costs up to four times that amount. We have made progress in reducing aviation accidents and civilian lost work days, but have much more to do to address military injuries and private motor vehicle fatalities. Our goal is zero preventable accidents, and I remain fully committed to achieving the 75% accident reduction target in 2008.

The current focus of our Safety Council is on increasing the accountability of individuals and leaders, as well as pursuing safety technologies. Accountability and leadership are key to an effective safety program. I urge you to continue to emphasize safety in the workplace and hold leaders accountable for their safety programs. Your efforts will make the Department a safer place to work, and more capable of defending the Nation and her interests. We have no greater responsibility than to take care of those who volunteer to serve.



OSD 07970-07
7712107 8 35 40 00

We can no longer tolerate the injuries, costs, and capabilities losses from preventable accidents

Memorandum from Secretary of Defense, 30
May 2007



NHA Symposium



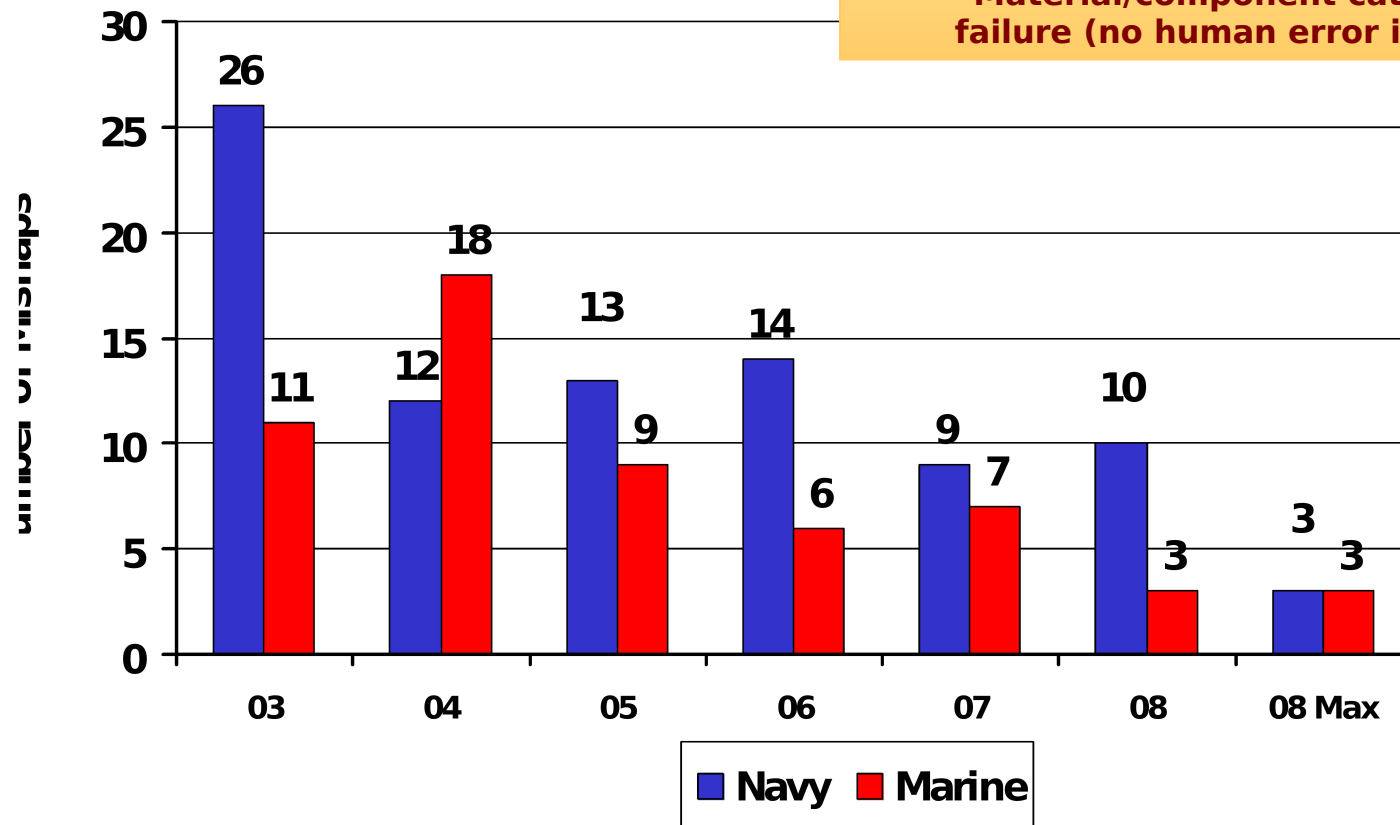
Bad Day



Class A Flight Mishaps

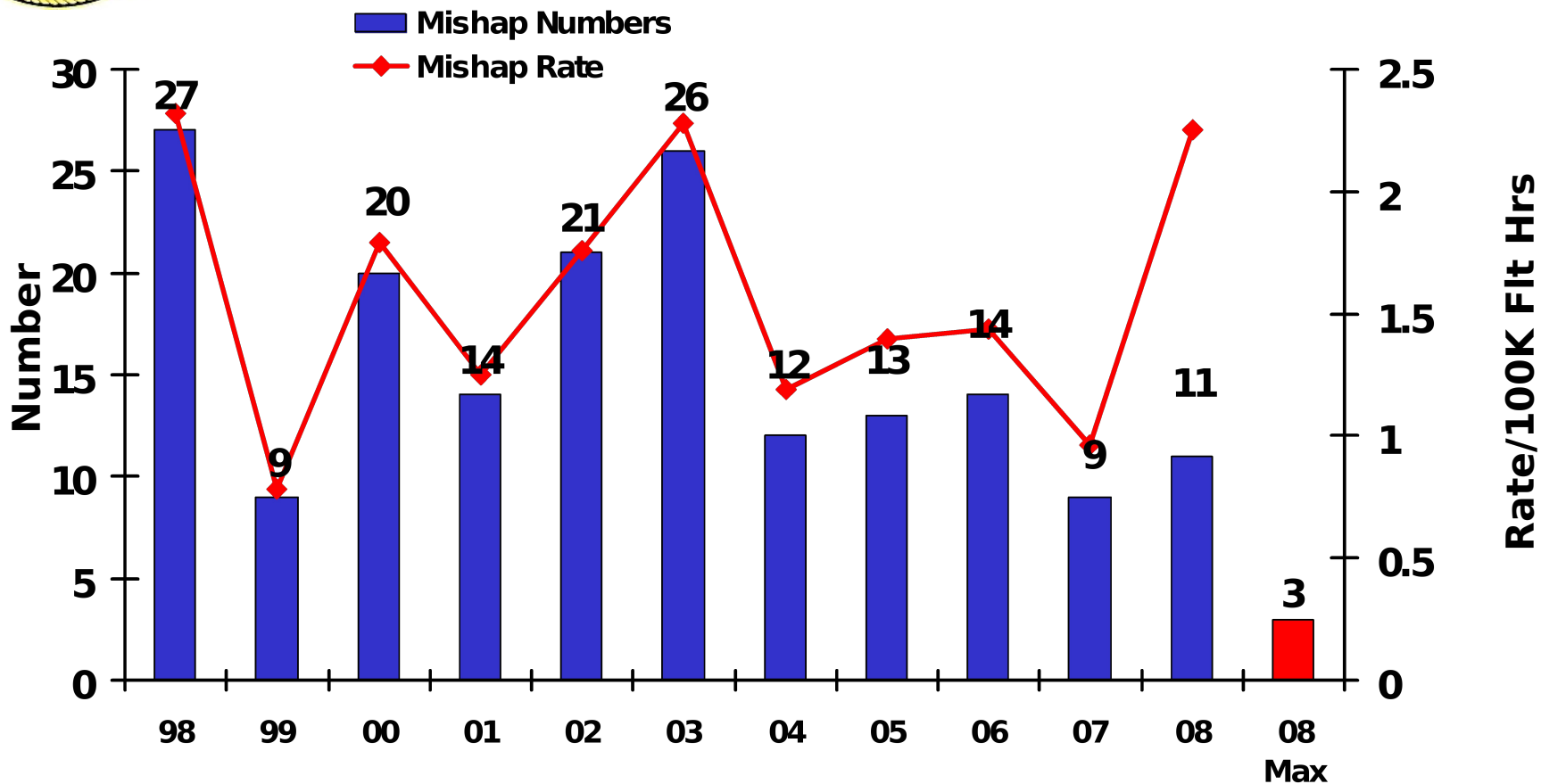
Causal Factors

- **Human Error (90%: 55% are HE alone)**
 - **Aircrew** (breakdown in Crew Resource Management, poor decision making, failure to properly perform emergency procedures)
 - **Supervisory** (failure to provide adequate guidance and training)
- **Material/Systems Malfunction (10%)**
 - **Material/component catastrophic failure** (no human error involved)



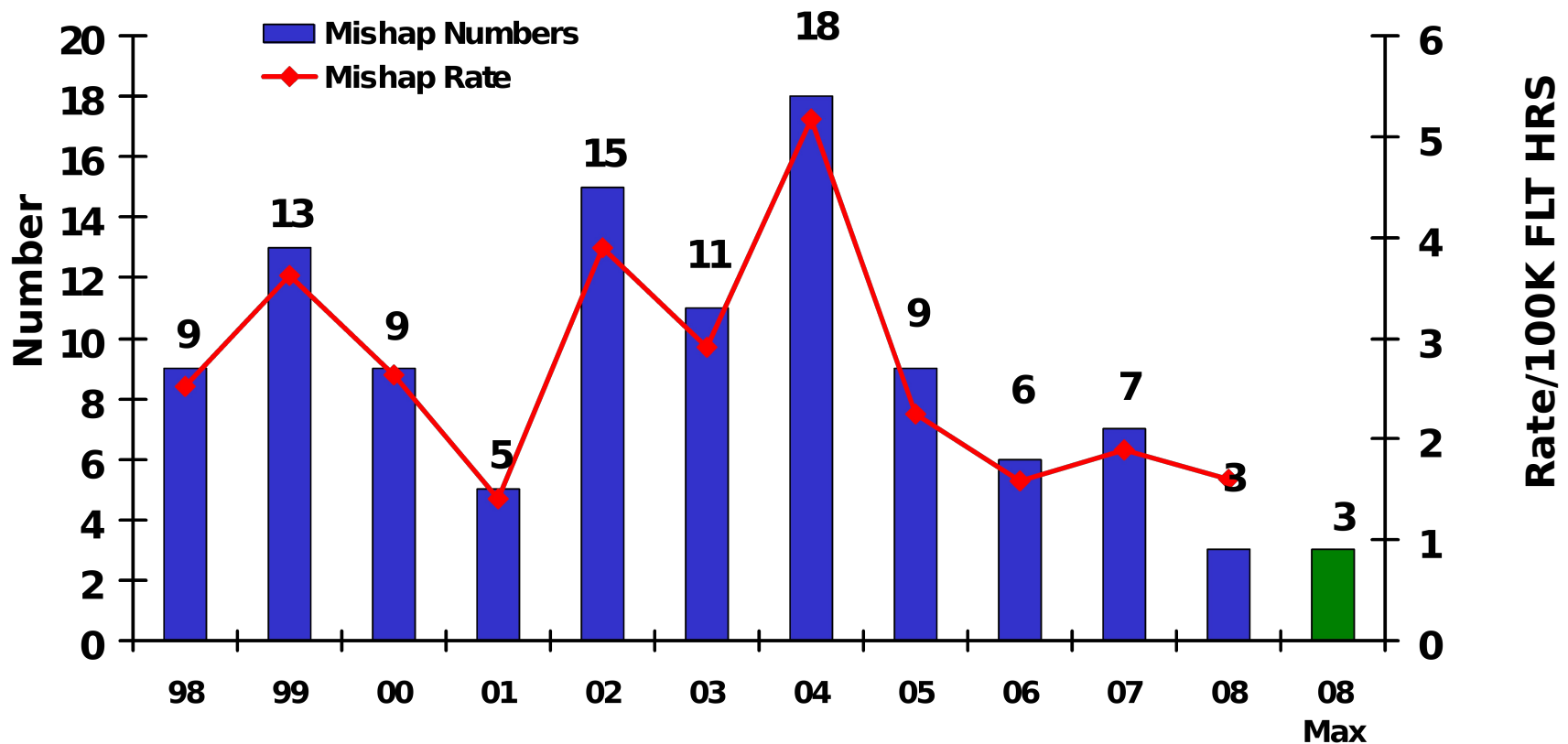


USN CLASS A FLIGHT





USMC CLASS A FLIGHT



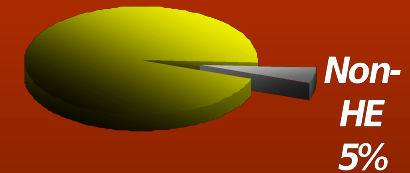
Human Error

USN/USMC, FY03-07

No. of Class A Mishaps

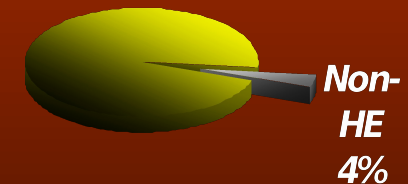
USN Aviation = 81 of 85

→ HE 95%



USMC Aviation = 52 of 54

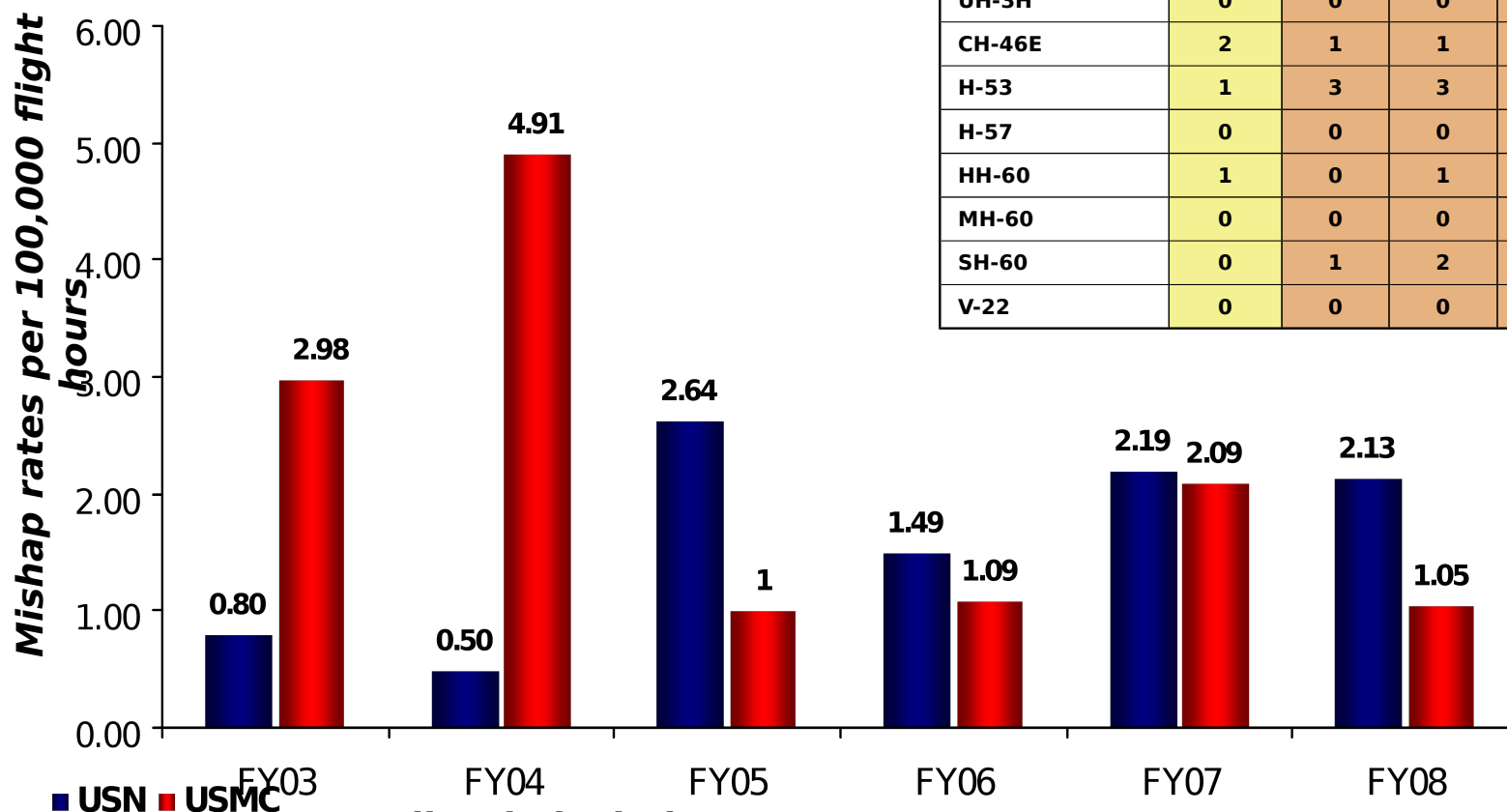
→ HE 96%



Human Error

Helicopter Historical Class A FM Mishap Rates

USN/USMC FY03-08



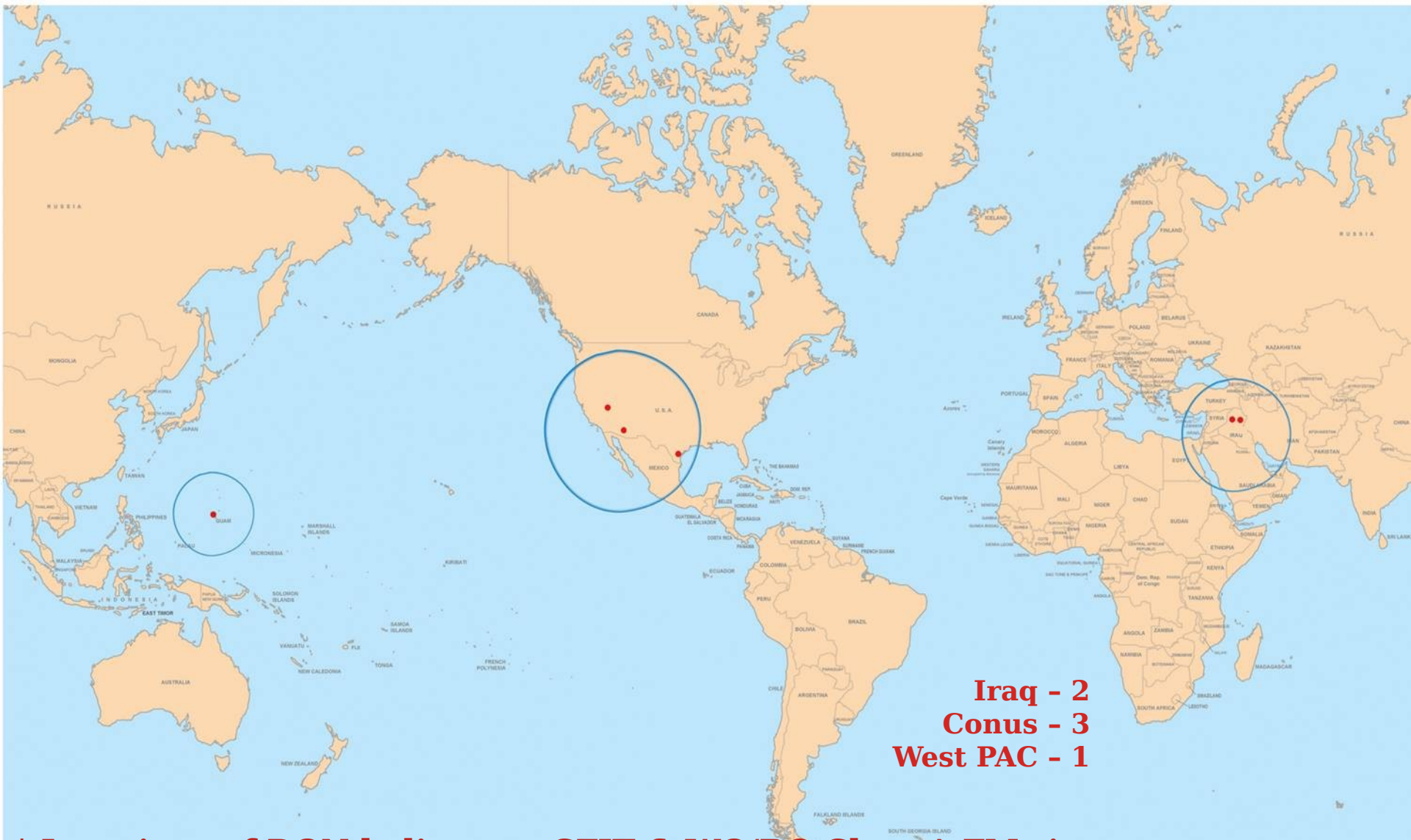
***All Helo includes**

V-22

HELOS	FY03	FY04	FY05	FY06	FY07	FY08
Total Mishaps	7	9	7	5	8	3
UH-1	2	2	0	0	1	0
HH-1	0	0	0	0	1	0
AH-1	1	2	0	1	0	0
UH-3H	0	0	0	0	0	0
CH-46E	2	1	1	0	1	0
H-53	1	3	3	1	1	1
H-57	0	0	0	1	0	0
HH-60	1	0	1	0	1	1
MH-60	0	0	0	0	2	0
SH-60	0	1	2	2	1	0
V-22	0	0	0	0	0	1



WHAT DO THESE RED DOTS HAVE IN COMMON?



* Locations of DON helicopter CFIT & WO/BO Class A FM's in

FY07 & FY08

NHA Symposium. April 14-17 2008



DEFINITION OF A CFIT

- **Collision with terrain, water, trees or a man-made obstacle during flight prior to planned touchdown.**

Note: This does not include the landing or take off phase of flight.

DEFINITION OF A WO/BO Mishap



- Mishaps involving helicopters, tiltrotors and vertical takeoff & landing aircraft/UAV resulting from encounters with whiteout or brownout conditions (visually degraded environment) during takeoff or landing

In the Dust





•LOOKING out the cockpit
of a 46 after a desert
landing

•Dash-1 is out there

CONTROLLED FLIGHT INTO TERRAIN (CFIT) WHITEOUT / BROWNOUT (WO/BO)

USN/USMC, FY03-07

No. of Class A CFIT/WOBO

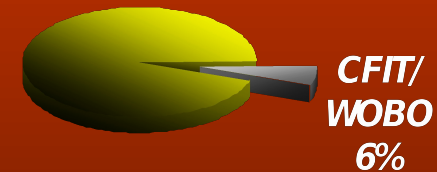
USN Aviation



5 of 85



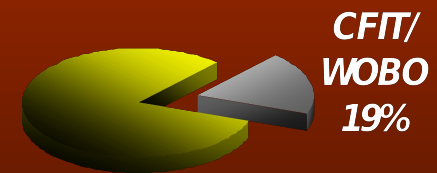
CFIT/WOBO



USMC Aviation



10 of 54



CFIT & WO/BO

- **FY 07**
 - Five of Eight helo Class A FM events were CFIT/WOBO (63%)
 - 3 USN / 2 USMC
- **FY 08**
 - One of Three helo Class A FM events were CFIT/WOBO (33%)
 - 1 USN



Navy CFIT & WO/BO

- **FY 07**
 - **7 MAY 07 SH-60F**
Struck power lines (CFIT)
 - **10 AUG 07 HH-60H**
Tail rotor struck building during troop insertion (WOBO)
 - **24 SEP 07 MH-60S**
Tail rotor struck tree during SAR training (CFIT)
- **FY 08**
 - **16 JAN 08 MH-53E**
Struck tower in IMC conditions (CFIT)



Marine Corps CFIT & WO/BO



- **FY 07**
 - **11 DEC 06 CH-53E, Impacted ground and rollover, Day Training, (WOBO)**
 - **16 AUG 07 HH-1N, Struck Cliff, Day Training (CFIT)**
- **FY08**
 - **None to date**

RED THREAT VS. BLUE THREAT

- Every DON helicopter mishap in FY 07 and FY 08 so far has been a result of the **BLUE** threat NOT direct enemy action (DEA).
- The cost in dollars and lives is unnecessary and unacceptable!



Aviation Trends and Takeaways

TRENDS

Mishap Investigations

- Human error (aircrew):
 - Causal factors
 - Skill-based errors
 - Decision errors
 - Preconditions for errors
 - CRM failures
 - Adverse mental states
- Inexperience
- Training issues

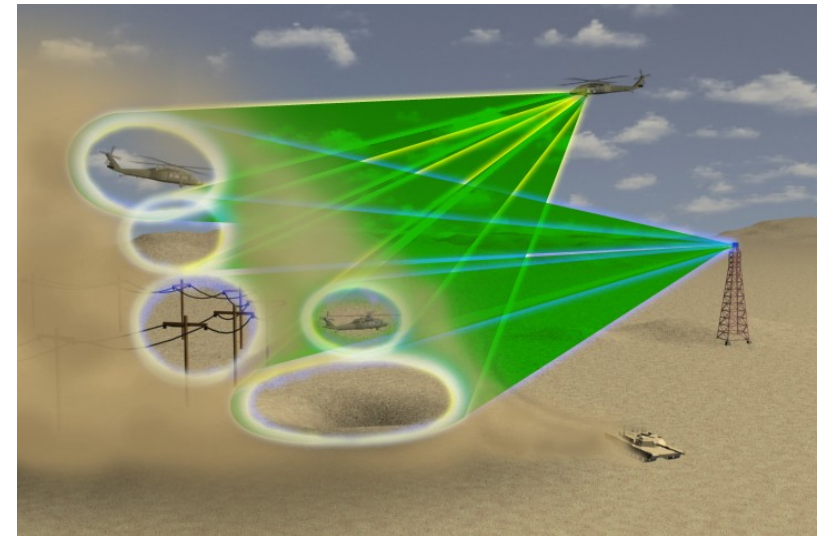
TAKEAWAYS

- Adherence to basic rules, regulations and NATOPS procedures
- Proper pre-flight planning
- Training
- Proficiency
- Institutionalize ORM & CRM
- Enforce standards
- Increase checks and balances



A Way Ahead





- Currently all services are exploring technological solutions
- Plan is to provide onboard equipment that will:
 - “See” through the obscuration
 - Provide cockpit instrumentation to allow landing from a hover or with slow forward airspeed



DOD/Service Brownout Mitigation Initiatives

OBJECTIVE: PRESERVE COMBAT CAPABILITY BY REDUCING LOSSES DUE TO BROWNOUT

• Near-Term Materiel Solutions

- Sandblaste 
- LandSafe Progra 
- Helicopter Autonomous Landing System (HALS II) 
- Improved Altitude Hold and Hover (I-AHHS) 
- Electronic Bumper
- 3-D Laser Radar





ORM – A systematic process, not a program

3 Levels

In Depth

Long term process with extensive research and planning

Deliberate

Pre-mission planning, time available for planning, recorded on paper.

Time Critical

Little time, done on the run, applied to control hazards introduced by unexpected events and changes to the plan.

4 Principles

- ✓ Accept no unnecessary risk.
- ✓ Anticipate and manage risk by planning.
- ✓ Make risk decisions at the right level.
- ✓ Accept risks when benefits outweigh the costs.

5 Steps



Reaching the War Fighter



The Blue **~~Threat~~**

**Puts the concepts
in to terms the War
Fighter
understands**

Threat Losses (FY Jan '91-07)

Red Threat - 18 Aircraft Destroyed

VS.

Blue Threat - 542 Aircraft Destroyed

Hazards = Threats

ORM = Tactics

CRM = Skills

Risk & Resource Management Big Picture

Strategic → **Tactical**

More Time &
Resources (for
Planning)

**In-
Depth**

**Deliberat
e**

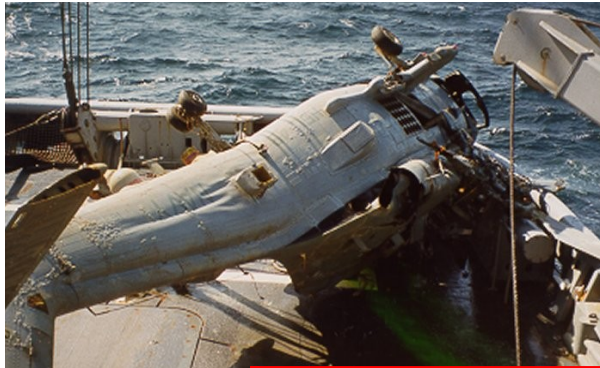
Limited Time &
Resources (for
Execution)

**Time
Critical**

**Mission &
Task
Success**

Controls from one level become resources

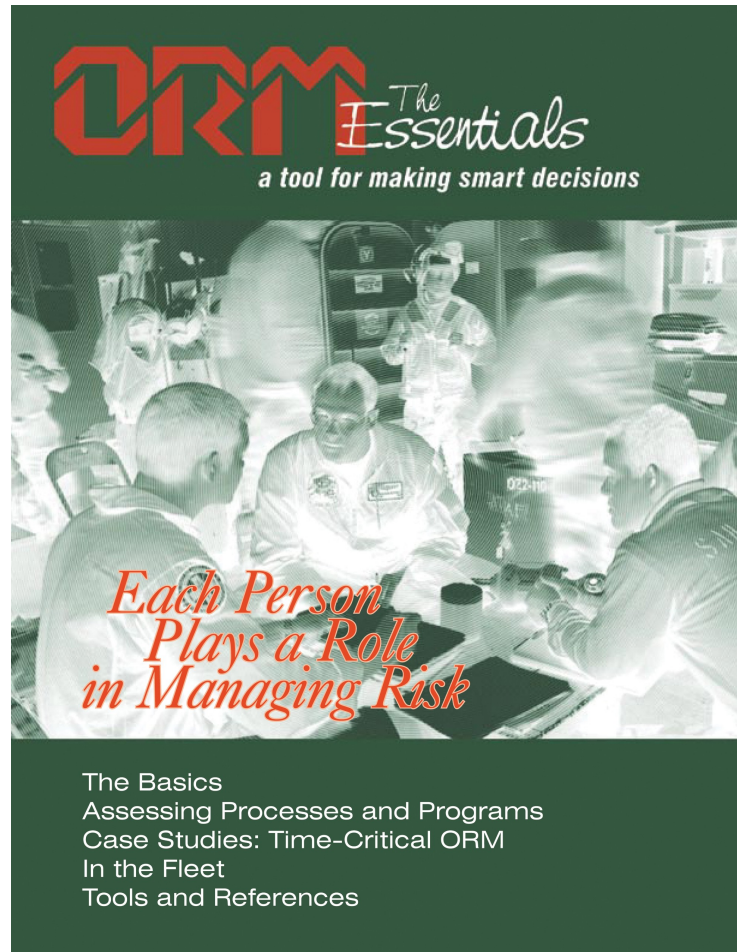
ORM is about understanding the potential consequences of your



- Degradation of combat readiness
- Impact on mission accomplishment
- Impact on the Team, Family and Fr



ORM Summary



- A **systematic process** to assist in making informed risk decisions
- Should be **integrated** into your command planning, briefing, execution and after action processes
- Relies on education, training, **experience and teamwork**
- Requires outstanding **communication** skills at all levels
- Requires a **environment** where hazards can be identified by anyone at any time

Not a member of NHA...





What We Have Done to Reduce Mishaps



776 aircraft
destroyed in
1954

2005
40 lives lost
19 a/c destroyed

2006
24 lives lost
18 a/c destroyed

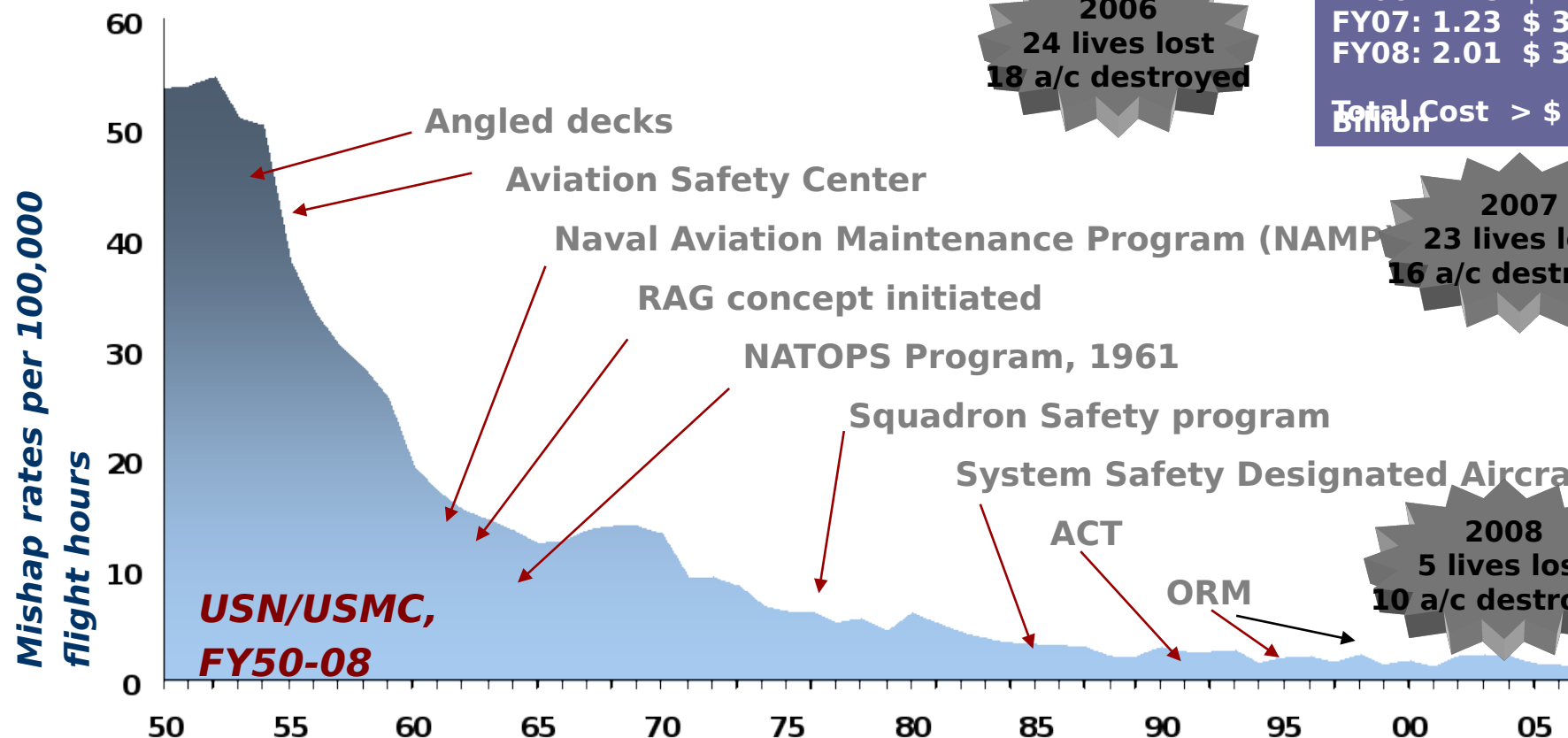
Class A Flight Mishap Rates / Costs:

FY05: 1.66 \$ 656 M
FY06: 1.48 \$ 476 M
FY07: 1.23 \$ 356 M
FY08: 2.01 \$ 393 M

Total Cost > \$ 1.5
Billion

2007
23 lives lost
16 a/c destroyed

2008
5 lives lost
10 a/c destroyed



Aviation Intervention Strategies





NSC Web Site

Naval Safety Center Home Page - Microsoft Internet Explorer provided by NMCI

Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail New Window

Address http://www.safetycenter.navy.mil/

Go Links



Naval Safety Center



Work, Play, Live ... Safely!

April 8, 2008

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[Afloat](#) | [Ashore](#) | [Aviation](#) | [Media](#) | [OSH](#) | [Acquisition](#) | [Services](#) | [Training](#) | [Popular](#) | [Staff](#)

Resources

- » Executive Summary
- » Hearing Conservation Toolbox
- » POD Notes, Slogans
- » Presentations
- » Safety Toolbox
- » Statistics
- » Success Stories
- » Traffic Safety Toolbox
- » **TRIPS** (Travel Risk Planning System)

Quick Links

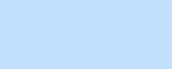
- » Culture Workshops
- » FOIA Request Navy / NSC
- » Friday Funnies
- » Photo of the Week
- » Safety School
- » Safety Surveys
- » Secure Site



PVM Mishap Update

At 0030 on April 5, a PFC suffered fatal injuries in a wreck on Camp Pendleton, Calif. A PFC passenger was in stable condition at a local hospital.

[PMV Stats](#) | [PMV Narratives](#)



What's New

» Naval Submarine Base Kings Bay Awarded Voluntary Protection Program Star Status

- » NHTSA Planners:
 - Share The Road 2008
 - 2008 Cinco de Mayo

» April 30th is Distracted Driving Awareness Day (DDAD) in Virginia

» "The Wonderful World of Transport"

» VT-9 Pilots Save Aircraft (Video)

» Preventing Hearing Loss -- Info from the N8MC Public Health Center

New Best Practices:

* Stand-Down (OPM fax)

www.safetycenter.navy.mil



NAVSAFECEN "SAVES" of the Year



29 October 2007:

-LT Barnet Harris , HT-28

-Student inadvertently secured the engine.

-LT Harris immediately executed a successful engine restart at 75 feet.

9 November 2007:

-LT Kelly Natter, LT Scott Cohick, AW1 Robert Johnson, AW2 Patrick Baumia and AW2 Jonathon Reese, HS-2

-Aircraft experienced a catastrophic tail rotor malfunction at the end of a long mission & 25nm from the ship.

-LT Natter executed an autorotation into the water at night on goggles in low light conditions.

-All crew and passengers egressed safely with only minor injuries.

2 February 2008:

-LT Theodore Lemerande, HT-28

-Single engine TH-57C helicopter lost all engine power at 500 feet, just after take-off.

-LT Lemerande executed a successful 180 degree autorotation back to the airport avoiding an airliner on take-off with a textbook power-off landing.

25 February 2008:

-LT John McKenzie HT-28

-Single engine TH57C helicopter lost all engine power at night at approximately 10 feet AGL.

-He executed the appropriate EPs to land the aircraft without further incident or injury.





Bangladesh Cyclone Relief



QUESTIONS?
COMMENTS!

QUESTIONS?
COMMENTS!





NAVAL SAFETY CENTER

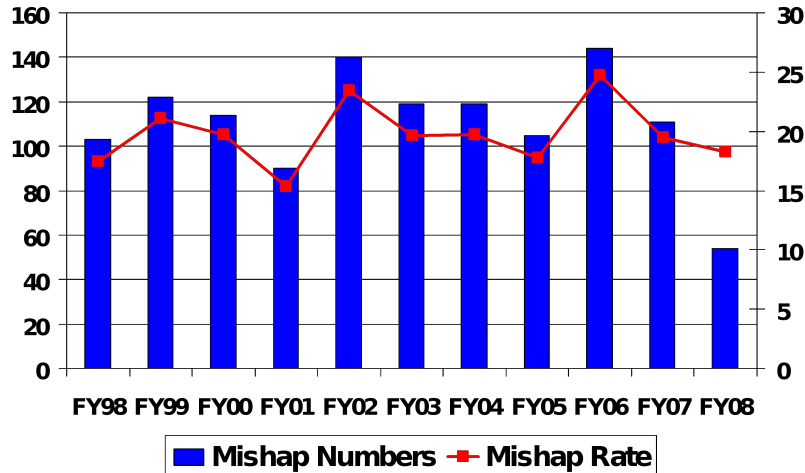
It's Your Safety Center!



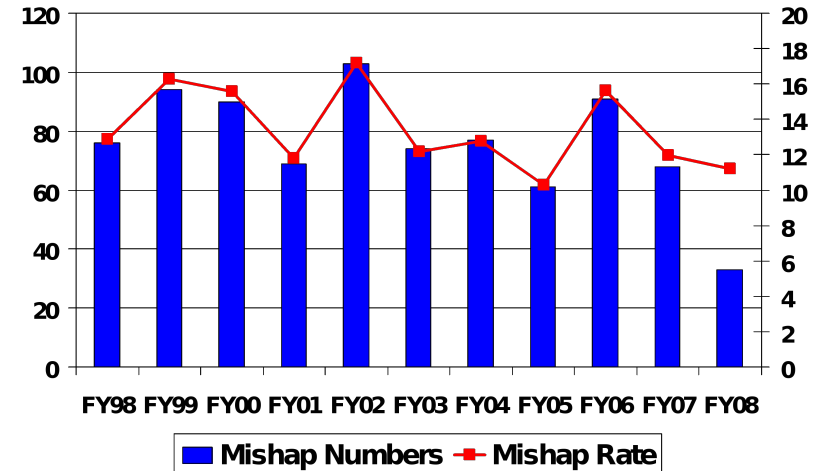
Back-Up Slides



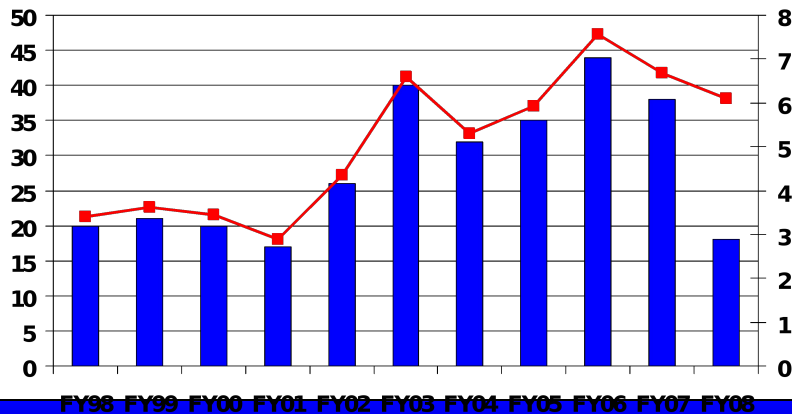
Navy/Marine PMV Fatalities



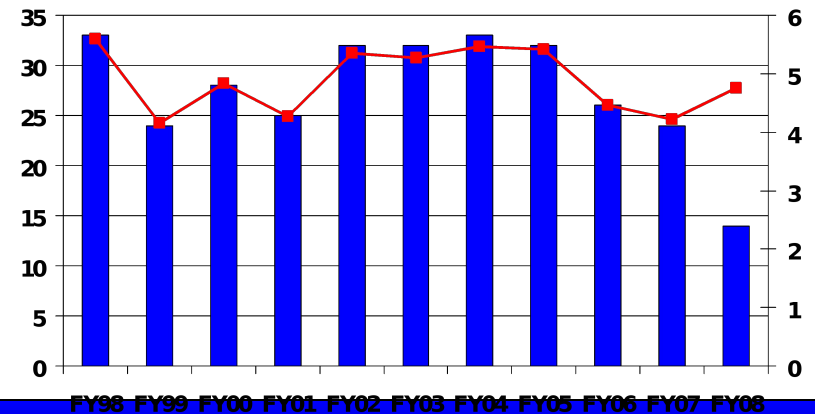
Navy/Marine 4-Wheel Fatalities



Navy/Marine Motorcycle Fatalities



Navy/Marine Off-duty/rec Fatalities



ORM: A Tool For Leaders



- ***Easy, common-sense process***
- ***Mind-set***
- ***Way of life - On- and Off-Duty***
- ***Operating discipline***
- ***Process must be taught***
- ***Must institutionalize ORM***

Five Steps



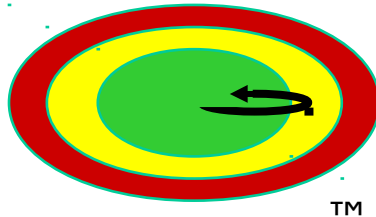
YOU CAN'T "ORM" SOMETHING THAT'S STUPID, TO SOMETHING THAT'S SMART!!!

Time Critical Risk Management Elements

Process and Mnemonic

- A** - Assess (your situation, your potential for error)
- B** - Balance Resources (to prevent and trap errors)
- C** - Communicate (risks and intentions)
- D** - Do & Debrief (take action and monitor for change)

Risk Assessment



- **Green:** Errors may occur, but they will be caught
- **Yellow:** Errors may occur, but they may not be caught and may become cumulative
- **Red:** Errors will occur that are not caught

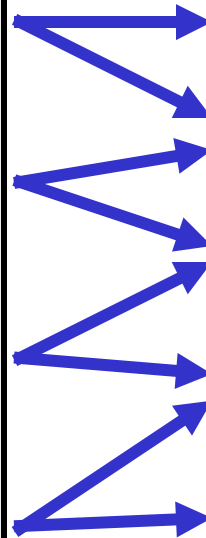
Crew Coordination Skills

- **Situational Awareness**
 - I know my environment
 - I can see changes
- **Mission Analysis**
 - I can assess the changes
 - I can see how they affect my job/mission
- **Adaptability/Flexibility**
 - The plan is flexible and we can adapt to changes
- **Decision Making**
 - We have enough information, time and a good plan of action, or we need help
- **Assertiveness**
 - I have confidence in myself, my team, and my leadership to bring new threats to their attention
- **Communication**
 - I need to let my teammates or others involved know what I know
- **Leadership**

Time Critical and Deliberate

Time Critical Process and Mnemonic

- A** - Assess (your situation, your potential for error)
- B** - Balance Resources (to prevent and trap errors)
- C** - Communicate (risks and intentions)
- D** - Do and Debrief (take action and monitor for change)



5-Step Deliberate Process

- 1. Identify Hazards**
- 2. Assess Hazards**
- 3. Make Risk Decisions**
- 4. Implement Controls**
- 5. Supervise (watch for changes)**



***Time
Critical
ORM
is a...***

Tactic

Blue Threat - Action/Inaction by whom is causing losses
Blue Threat - Losses far exceed **Red Threat** losses